

What is claimed is:

1        1.    A method for quadrature-bias compensation in a  
2        Coriolis gyro, whose resonator (1) is in the form of a  
3        coupled system comprising a first and a second linear  
4        oscillator (3, 4), having the following steps:  
5        -     determination of the quadrature bias of the Coriolis  
6        gyro,  
7        -     production of an electrostatic field in order to vary  
8        the mutual alignment of the two oscillators (3, 4) with  
9        respect to one another, with the alignment/strength of the  
10       electrostatic field being regulated such that the  
11       determined quadrature bias is as small as possible.

1       2.    The method as claimed in claim 1, **characterized** in  
2       that the electrostatic field results in a change in the  
3       alignment of first spring elements ( $5_1$  to  $5_4$ ), which  
4       connect the first oscillator (3) to a gyro frame ( $7_3$ ,  $7_4$ )  
5       of the Coriolis gyro, and/or a change in the alignment of  
6       second spring elements ( $6_1$ ,  $6_2$ ), which couple the first  
7       oscillator (3) to the second oscillator (4).

1        3.    The method as claimed in claim 2, **characterized** in  
2        that the alignment of the first spring elements ( $5_1$  to  $5_4$ )  
3        is varied by varying the position/alignment of the first  
4        oscillator (3) by means of the electrostatic field, and in  
5        that the alignment of the second spring elements ( $6_1$ ,  $6_2$ )  
6        is varied by varying the position/alignment of the second  
7        oscillator (4) by means of the electrostatic field.

1        4.    The method as claimed in claim 2 or 3, **characterized**  
2        in that the electrical field results in the alignments of  
3        the first and second spring elements ( $6_1$ ,  $6_2$ ,  $5_1$  to  $5_4$ )  
4        being made orthogonal with respect to one another.

1        5.    The method as claimed in one of claims 2 to 4,  
2        **characterized** in that the second oscillator (4) is  
3        attached to/clamped in on the first oscillator (3) at one  
4        end by means of the second spring elements ( $6_1$ ,  $6_2$ ),  
5        and/or the first oscillator (3) is attached to/clamped in  
6        on a gyro frame of the Coriolis gyro at one end by means  
7        of the first spring elements ( $5_1$  to  $5_4$ ),

1        6.    A Coriolis gyro, whose resonator (1) is in the form  
2        of a coupled system comprising a first and a second linear  
3        oscillator (3, 4),

4        **characterized by**

5        -        a device for production of an electrostatic field  
6        ( $11_1'$ ,  $11_2'$ ,  $10_1$  to  $10_4$ ) by means of which the alignment of  
7        the two oscillators (3, 4) with respect to one another can  
8        be varied,

9        -        a device (45, 47) for determination of any quadrature  
10       bias of the Coriolis gyro, and

11       -        a control loop (55, 56, 57), by means of which the  
12       strength of the electrostatic field is regulated as a  
13       function of the determined quadrature bias such that the  
14       determined quadrature bias is as small as possible.

1        7.    The Coriolis gyro as claimed in claim 6,

2        **characterized** in that the first oscillator (3) is  
3        connected by means of first spring elements ( $5_1$  to  $5_4$ ) to  
4        a gyro frame ( $7_1$ ,  $7_2$ ) of the Coriolis gyro, and the second  
5        oscillator (4) is connected by means of second spring  
6        elements ( $6_1$ ,  $6_2$ ) to the first oscillator (3).

1        8.    The Coriolis gyro as claimed in claim 7,  
2        **characterized** in that the first and second spring elements  
3        are arranged/designed such that the alignment angle of the  
4        first spring elements ( $5_1$  to  $5_4$ ) with respect to the gyro  
5        frame ( $7_3$ ,  $7_4$ ) can be varied by means of the electrostatic  
6        field, and/or in that the alignment angle of the second  
7        spring elements ( $6_1$ ,  $6_2$ ) with respect to the first  
8        oscillator (3) can be varied by means of the electrostatic  
9        field.

1        9.    The Coriolis gyro as claimed in claim 7 or 8,  
2        **characterized** in that the second oscillator (4) is  
3        attached to/clamped in on the first oscillator (3) at one  
4        end by means of the second spring elements ( $6_1$ ,  $6_2$ ),  
5        and/or the first oscillator (3) is attached to/clamped in  
6        on a gyro frame of the Coriolis gyro at one end by means  
7        of the first spring elements ( $5_1$  to  $5_4$ ).

1        10.   The Coriolis gyro as claimed in one of claims 7 to 9,  
2        **characterized** in that all of the second spring elements  
3        ( $6_1$  to  $6_2$ ) which connect the second oscillator (4) to the  
4        first oscillator (3) are designed such that force is  
5        introduced from the first oscillator (3) to the second  
6        oscillator (4) essentially from one side of the first  
7        oscillator (3).

1 11. The Coriolis gyro as claimed in one of claims 7 to  
2 10, **characterized** in that all of the first spring elements  
3 (5<sub>1</sub> to 5<sub>4</sub>) which connect the first oscillator (3) to the  
4 gyro frame (7<sub>3</sub>, 7<sub>4</sub>) of the Coriolis gyro are arranged  
5 parallel and on the same plane as one another, with the  
6 start and end points of the first spring elements (5<sub>1</sub> to  
7 5<sub>4</sub>) each being located on a common axis.

1 12. A Coriolis gyro (1'), having a first and a second  
2 resonator (70<sub>1</sub>, 70<sub>2</sub>), which are each in the form of a  
3 coupled system comprising a first and a second linear  
4 oscillator (3<sub>1</sub>, 3<sub>2</sub>, 4<sub>1</sub>, 4<sub>2</sub>), with the first resonator (70<sub>1</sub>)  
5 being mechanically/electrostatically connected/coupled to  
6 the second resonator (70<sub>2</sub>) such that the two resonators  
7 can be caused to oscillate in antiphase with respect to  
8 one another along a common oscillation axis (72).

1       **13.** The Coriolis gyro (1') as claimed in claim 12,

2       **characterized by:**

3       - a device for production of electrostatic fields (11<sub>1</sub>,  
4       11<sub>2</sub>, 10<sub>1</sub> to 10<sub>4</sub>, and 11<sub>3</sub>, 11<sub>4</sub>, 10<sub>5</sub> to 10<sub>8</sub>), by means of  
5       which the alignment of the linear oscillators (3<sub>1</sub>, 3<sub>2</sub>, 4<sub>1</sub>,  
6       4<sub>2</sub>) with respect to one another can be varied,

7       - a device for determination of the quadrature bias of  
8       the Coriolis gyro (1'), and

9       - control loops (64), by means of which the strengths  
10      of the electrostatic fields are regulated such that the  
11      determined quadrature bias is as small as possible.

1       **14.** The Coriolis gyro (1') as claimed in claim 12 or 13,

2       **characterized** in that the configurations of the first and  
3       of the second resonator (70<sub>1</sub>, 70<sub>2</sub>) are identical, with the  
4       resonators (70<sub>1</sub>, 70<sub>2</sub>) being arranged axially symmetrically  
5       with respect to one another, with respect to an axis of  
6       symmetry (73) which is at right angles to the common  
7       oscillation axis (72).

1       **15.** The Coriolis gyro (1') as claimed in one of claims 12

2       to 14, **characterized** in that the first oscillators (3<sub>1</sub>,  
3       3<sub>2</sub>) are each connected by means of first spring elements  
4       (5<sub>1</sub> - 5<sub>8</sub>) to a gyro frame (7<sub>1</sub> - 7<sub>14</sub>) of the Coriolis gyro,  
5       and the second oscillators (4<sub>1</sub>, 4<sub>2</sub>) are each connected by  
6       means of second spring elements (6<sub>1</sub> - 6<sub>4</sub>) to one of the  
7       first oscillators (3<sub>1</sub>, 3<sub>2</sub>).